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Combating Tobacco Use in the United States Army

PRINCIPAL INVESTIGATOR:
Principal Investigator: Alexander Prokhorov, M.D., Ph.D.
Onsite Co-PI Sharon Reese, LTC, U.S. Army, AN

CONTRACTING ORGANIZATION:
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Houston, TX 77030-4009

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14. ABSTRACT

This study will test the effectiveness of a computer-based cigarette smoking and smokeless tobacco prevention and cessation video game among active Army personnel stationed at Fort Hood, Texas. The study has been designed to permit analyses sensitive enough to detect differences for the two primary hypotheses: reductions in smoking initiation and smoking cessation. During the dates covered in this Annual Report the research team was involved in the preparation phase of the intervention development, as described in the grant proposal. Regular telephone and email communication has been established between researchers at the UT M. D. Anderson Cancer Center and Fort Hood which is the study site. The principal investigator and key members of the team have conducted a site visit at Fort Hood, during which all aspects of the research project were presented to the local healthcare leadership. The members of the investigative team participated in the Military Health Forum in Kansas, MO, during which the proposed intervention study was presented to the military researchers. The team has assembled a media inventory document necessary for completion of the interactive tobacco cessation and prevention educational tool (video game) and began weekly meetings with our creative design team. With the assistance from our study consultants, the investigative team has collected the state-of-the-art measurement scales and developed the draft survey instruments which are planned to be soon reviewed by our military collaborators. The creative design team was hired and currently consists of a Creative Lead, Flash Designer, and Script Writer. An Illustrator is in the process of being hired.

15. SUBJECT TERMS
Educational videogame, tobacco use, military.

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Introduction

The study builds on previous projects and utilizes CD-ROM applications, web-based multimedia programs and an educational video game kiosk. The videogame is theory-guided and uses animations, videos and interactive activities to provide facts about smoking and tobacco use, as well as provides skills needed in order to adopt a tobacco-free lifestyle. Project COMBAT will test the effectiveness of a computer-based smoking and smokeless tobacco prevention and cessation interactive multimedia tool (videogame) among active Army personnel stationed at Fort Hood, Texas.

Body

Communications with Onsite Co-PI

Throughout the past year LTC Sharon Reese has been a vital component of our research team and we are grateful for her assistance and lending her expertise. We have regular and consistent email and telephone communications to share project updates, review focus group documents and discuss project recruitment strategies. We schedule a team conference call every quarter to further ensure team cohesiveness. Conference calls have included discussions regarding participant recruitment, participant follow-up, kiosk placement, tobacco cessation resources available on base, status of BAMC IRB approval, pending The USAMRMC Human Subject Protection Office (HRPO) approval, informed consents and funding for staff that will be at Fort Hood.

Fort Hood Site Visit

The University of Texas M. D. Anderson Cancer Center (MDACC) research team made a site visit to Fort Hood in Killeen Texas on May 19-20, 2009. Research team members include Principal Investigator Dr. Alex Prokhorov, M.D., Ph.D., Post Doctoral Fellow, Dr. Karen Calabro, Dr.PH, Research Manager, Mary Fitzgerald, MA, and Project Director, Leti A. Gatus, MPH. The team met with Onsite Co-PI, LTC Sharon Reese, Chief, Nurse Researcher at Carl R. Darnall Army Medical Center (CRDAMC) and Sally Wrobleski, Chief, Health Promotion and Wellness Program as well as with other hospital executives during the site visit. The team presented an overview of the study and discussed recruitment plans, videogame kiosk placement, and participant tracking plans.

LTC Sharon Reese was able to guide the research team through parts of Fort Hood and show where some of the barracks and the Wellness Center were located. She also gave us a full tour of CRDAMC. This provided the research team with a greater understanding for the daily operations that occur at Fort Hood and CRDAMC.

Educational Videogame Development

This past year has allowed the research team to develop the educational videogame tool that is tailored for Army personnel and is guided by the Transtheorertical Model of Change. The videogame's development began with establishing biweekly meetings to conceptualize the game, discuss game features, create game documents and collect the content needed. The research team hired The

SCI Group to be the Creative Design Team to create the interactive multimedia intervention tool (i.e., videogame). Biweekly meetings have recently evolved into script review meetings and demos that showcase current works by the Flash Designer/Developer and Creative Lead. The demos also enable the research team time to receive progress updates and discuss the work that will be done in the following week(s). The Creative Design Team includes the Creative Project Lead, Flash Designer/Developer, Script Writer and soon to be hired, Illustrator/Designer.

The Creative Project Lead has worked with the research team to define a set of concepts that are included in the design of the intervention. The concepts that were developed for programming included: concepts for overall game play, concepts for interactive activities, and concepts for program artwork and script styles. The Creative Project Lead documented requirements for the educational videogame and included: definition for intervention screen flow, definition of data fields to be captured in user profiles, definition of mechanism for data retrieval by administrators, definition of program features and definition of features for individual “pop-up” activities within program screens. Additionally, the Creative Project Lead developed schedules, plans and documents for managing and tracking the development cycles.

The Flash Designer/Developer has been able to work on three key components: (1) spike work with prototype codebase, (2) re-factor prototype user profile storage, retrieval and reporting system and (3) re-factor prototype phase 1. In order to spike work with prototype codebase the Flash Designer/Developer needed to review previous system does, evaluate options for extension and modification of system code and plan for re-factoring efforts with flow-charts and additional code comments. For the second key component the following needed to be determined: system support storage, retrieval and reporting system, system support storage, retrieval and reporting of multiple user profiles on a single kiosk and code optimized and modularized to enable more rapid extension. For the final key component of re-factoring the prototype, the Flash Designer/Developer needed to implement new screen-to-screen flow (as defined in the wireframe) with stub media, remove unused elements from prototype as necessary and prototype revised grid system for isometric world.

The Script Writer is currently finishing final script pieces for the educational videogame. They have been responsible for writing original script pieces for the in-game elements, main storyline, intros/outros and videotaping session scripts as needed. They have been able to work with Dr. Jay Lee, a consultant and military expert, to ensure proper use of language and army jargon for the target population.

The Illustrator/Designer will be responsible for creating original concept artwork, illustrations for in-game elements, artwork for game interface elements and will work with the research team to create a compelling multimedia experience. The artwork will be presented to the research team weekly and will be done so to keep in line with current project timelines.

Creation of game documents

The MDACC research team and the creative design team created a Media Inventory document which serves as the videogame’s blueprint necessary for

development. The document contains information on each *mission* within the game, along with learning objectives, media types, *mission* descriptions, lengths of segments, team assignments, and reusable design inventories. With this document the following *missions* have been outlined: Crossfire Field, Medic, Biohazard, Sleeping Quarters, Mine Field, Gym, PX, Road Block, Intel and Secret Location.

The user profile algorithm was created to provide the creative design team with information needed to create the algorithm when participants play the videogame. See Figure 1. The staging algorithm provides developers with the information needed to create the staging questions at the beginning of the videogame. These staging questions will establish the participants' educational track depending on their current smoking status, level of addition and readiness to quit. See Figure 2. A video/images list documents what videos need to be videotaped and what images need to be gathered for the videogame. The videos include personal testimonies of current smokers, nonsmokers as well as medical advice from physicians and smoking cessation experts.

Game Features

The game features that will determine the type of game the participants will play have been outlined. The platform of the game will run on a Windows PC and the game engine will be a 2D isometric game engine with 3D-like qualities. The game's length and data retrieval functionalities have also been outlined and will allow multiple players to use one single kiosk. The introduction of the video game will introduce both the story and character. After the players see the introduction they will be able to personalize their Avatar and select what their character will look like. Next the interactive map will display the main playing area as well as the player's accomplished missions and rewards. Lastly, the player will be given chances to earn rewards/points and at the end of the game the player is given a 'rank' based on their scores.

Please refer to Figures 9-12 for screen shots of Project COMBAT which are still works in progress.

Videotaping Sessions

Videos will be embedded within the videogame to supplement the interactive experience. While not all videotaping sessions have been completed the research team and creative design team have successfully videotaped two sessions. The first videotaping session was of Dr. Anna Likacheva, a Resident at UT M. D. Anderson Cancer Center. She was able to provide firsthand experience in treating cancer patients and her knowledge with tobacco related cancers. The second videotaping session was of Mr. Curtis Ansley, a cancer survivor. He was able to share his story through a presentation with images from his surgery. He used smokeless tobacco for numerous years and developed a mouth cancer that required him to have part of his jaw removed. His surgeons at MDACC were able to take skin from his leg and replace the damaged and cancerous skin from his jaw. He has also given the team permission to use his surgical photographs within the videogame as well. Both Dr. Anna Likacheva and Mr. Curtis Ansley were very gracious for participating in the videotaping sessions. See Figures 3-8 for pictures taken during the videotaping sessions.

Survey development

The survey instruments have been developed alongside the creation of the intervention. The instruments include a baseline survey, end-of-treatment questionnaire, 6 and 12 month follow-up surveys. The baseline survey and end-of-treatment questionnaire have been drafted and will be sent to our collaborators, Drs. Hudmon and Severson for further review. The 6 and 12 month follow-ups surveys are currently being drafted and will be sent to our collaborators once they are complete.

The research team recently discovered an online server to use for the survey instruments and have received permission to purchase a portable wifi device needed to access the online surveys. Permission has been granted by both MDACC's Information Security Offices as well as our onsite Co-PI for their use at Fort Hood. Providing participants with an online survey will allow the survey to be modified for the purposes of Project COMBAT and can be emailed to participants who leave Fort Hood and are possibly redeployed during the intervention phase of the project. Currently other team members under the supervision of Dr. Alex Prokhorov are also using the online survey and have found them to be easy to create, easy to use and participants are able to complete them without any problems.

Problem Areas

The protocol has not yet been approved by the Brooke Army Medical Center (BAMC) IRB. Our onsite Co-PI, LTC Sharon Reese, at CRDAMC indicated this was due to a prolonged illness by the IRB Chair which resulted in several IRB review meetings being canceled. The protocol is currently being reviewed and we anticipate approval by BAMC IRB in the next quarter.

Focus groups have not been conducted as expected due to the time it has taken to get BAMC IRB approval and expect to conduct them in the upcoming quarter pending BAMC IRB approval and Human Subjects approval from USAMRMC HRPO. The focus groups will provide the research team with valuable information regarding the Army Soldiers' attitudes towards our current intervention developments as well as providing feedback needed to ensure a culturally appropriate game design.

Key Research Accomplishments

- Established a project timeline for both research team and design team
- Gathered game content material
- Selected and hired Creative Design Team, The SCI Group
- Developed Media Inventory document
- Currently creating script
- Created user profile algorithm
- Enhanced features of prototype
- Identified kiosk developers, TouchConcept
- Videotaping sessions with physician and former ST user

Reportable Outcomes

Military Health Forum Presentation

Principal Investigator, Dr. Alex Prokhorov was invited to participate in the Military Health Forum held in Kansas City, MO on September 3, 2009. Attendees included Dr. Alex Prokhorov, Dr. Karen Calabro and Leti A. Gatus. The presentation, "Behavioral Therapies for Tobacco Control" included an introduction of tobacco use in the military, a description of Project COMBAT's prototype, *Escape With Your Life* and an overview of Project COMBAT. Dr. Prokhorov was interviewed by USAMRMC, CDMRP Public Affairs Coordinator, Gail Whitehead during this presentation. The videotaped interview contained information regarding Project COMBAT's prototype, current military tobacco findings and Project COMBAT's status.

MDACC Grand Rounds Presentation

Principal Investigator, Dr. Alex Prokhorov was invited to participate in The University of Texas M. D. Anderson Cancer Center's Grand Rounds on April 30, 2010. The presentation, "Using theory and technology to raise a generation of non-smokers in the U.S." will include a brief presentation of current Project COMBAT images of the kiosk design as well as current screen shots of the videogame that have been designed thus far which include the interactive map, the squad leader and an outline of a mini-game image.

Conclusion

The research team and creative design team have been able to conceptualize, outline and design the interactive multimedia educational tool within this past year. It required both teams to work together to develop the required documents, algorithms and processes needed to design the videogame. The creative design team has been able to create a wireframe which outlines the game play that the user will follow as they play the game. The weekly demo sessions held have been a great way to showcase the team's work and make remarks and edits as needed. The team will continue with their work on the videogame, finalizing script and creating artwork.

The research team has worked closely with collaborators at Fort Hood and plans are in place to conduct focus groups in the next quarter. A second site visit to Fort Hood will also confirm kiosk placement, recruitment strategies and study personnel that will aid in the recruitment of participants. Communications with our onsite Co-PI, LTC Sharon Reese will continue and will aid in the development of field protocol, hiring procedures and survey development.

References N/A

Appendices N/A

Supporting Data:
Figure 1. User profile algorithm

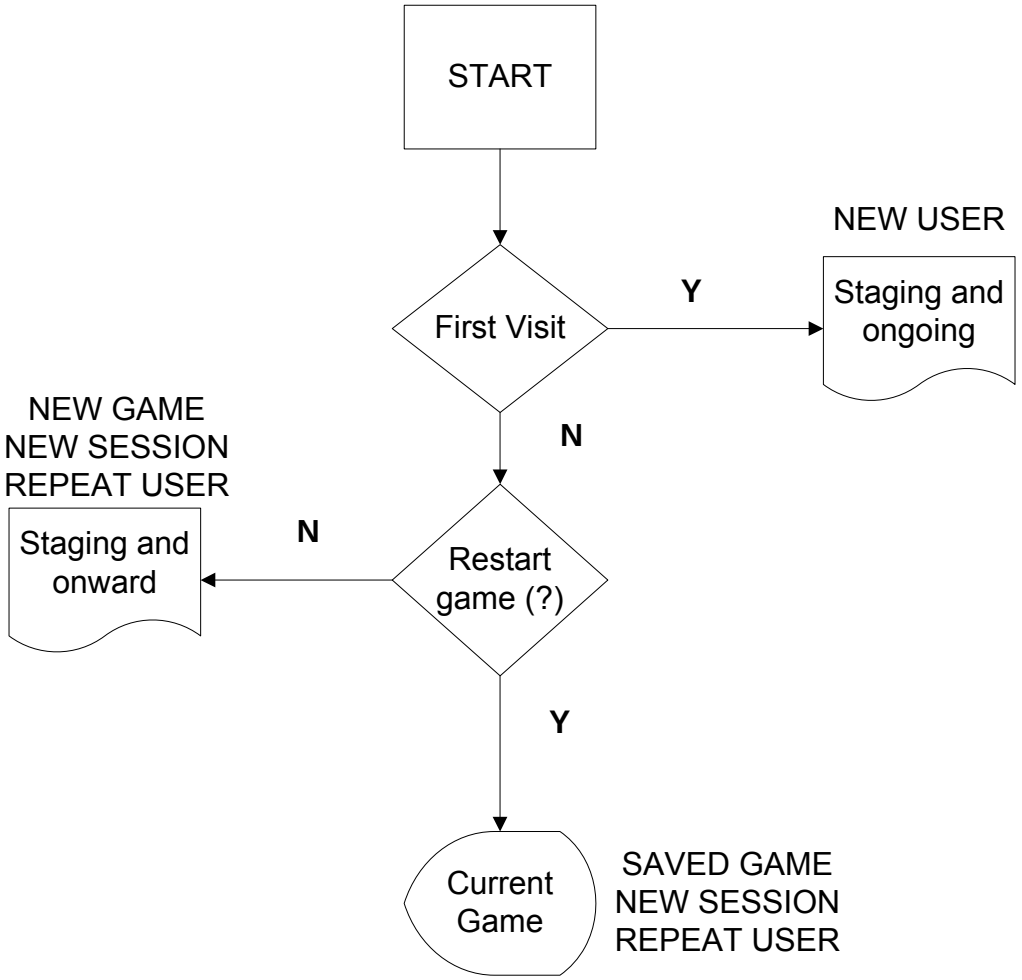

Figure 2. Staging algorithm

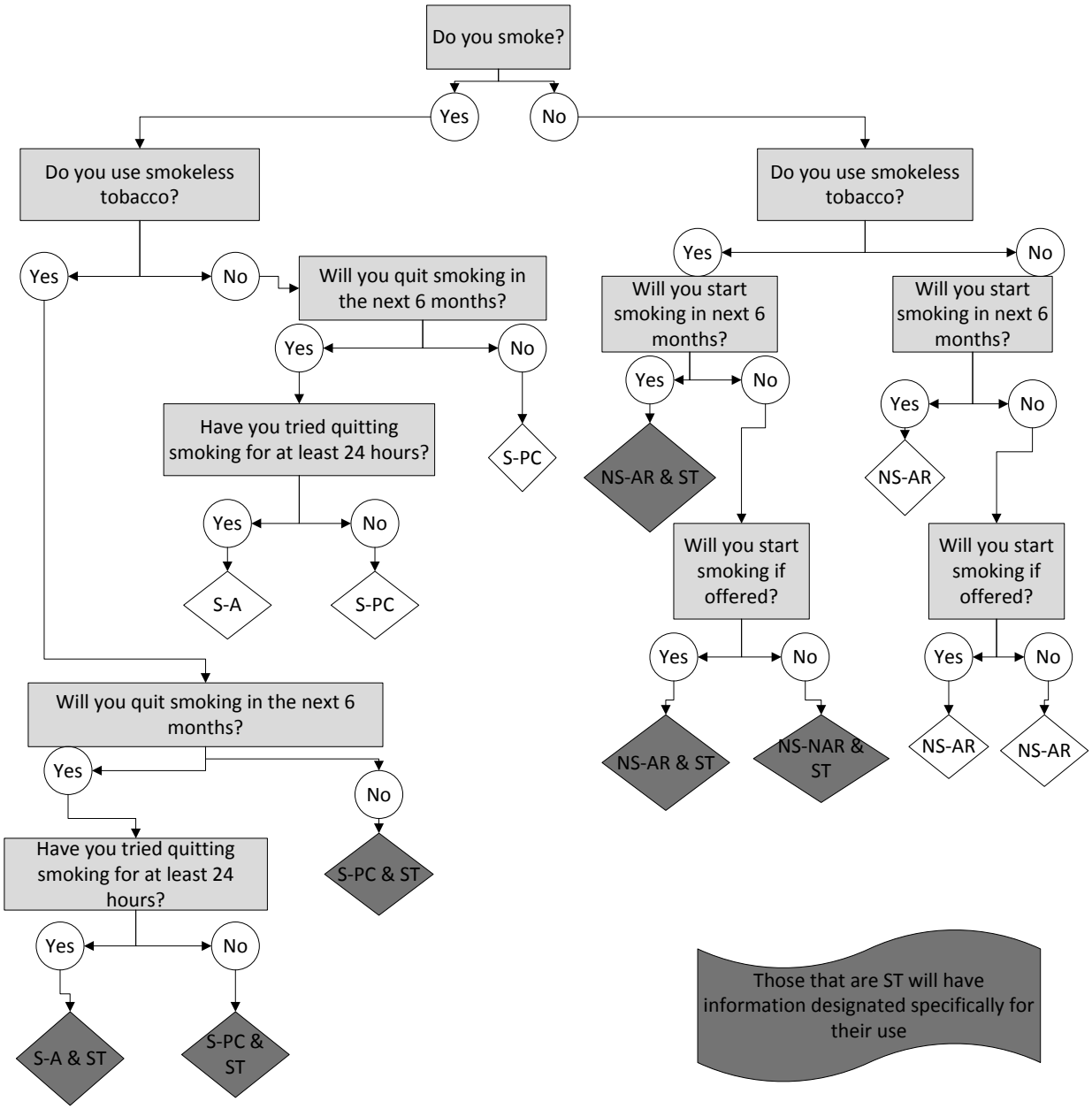

Figure 3. Dr. Anna Likhacheva Videotaping Session

Figure 4. Dr. Anna Likhacheva Videotaping Session

Figure 5. Dr. Anna Likhacheva Videotaping Session

Figure 6. Dr. Anna Likhacheva Videotaping Session

Figure 7. Mr. Curtis Ansley Videotaping Session

Figure 8. Dr. Curtis Ansley Videotaping Session

Figure 9. COMBAT Screen Shot (prototype)

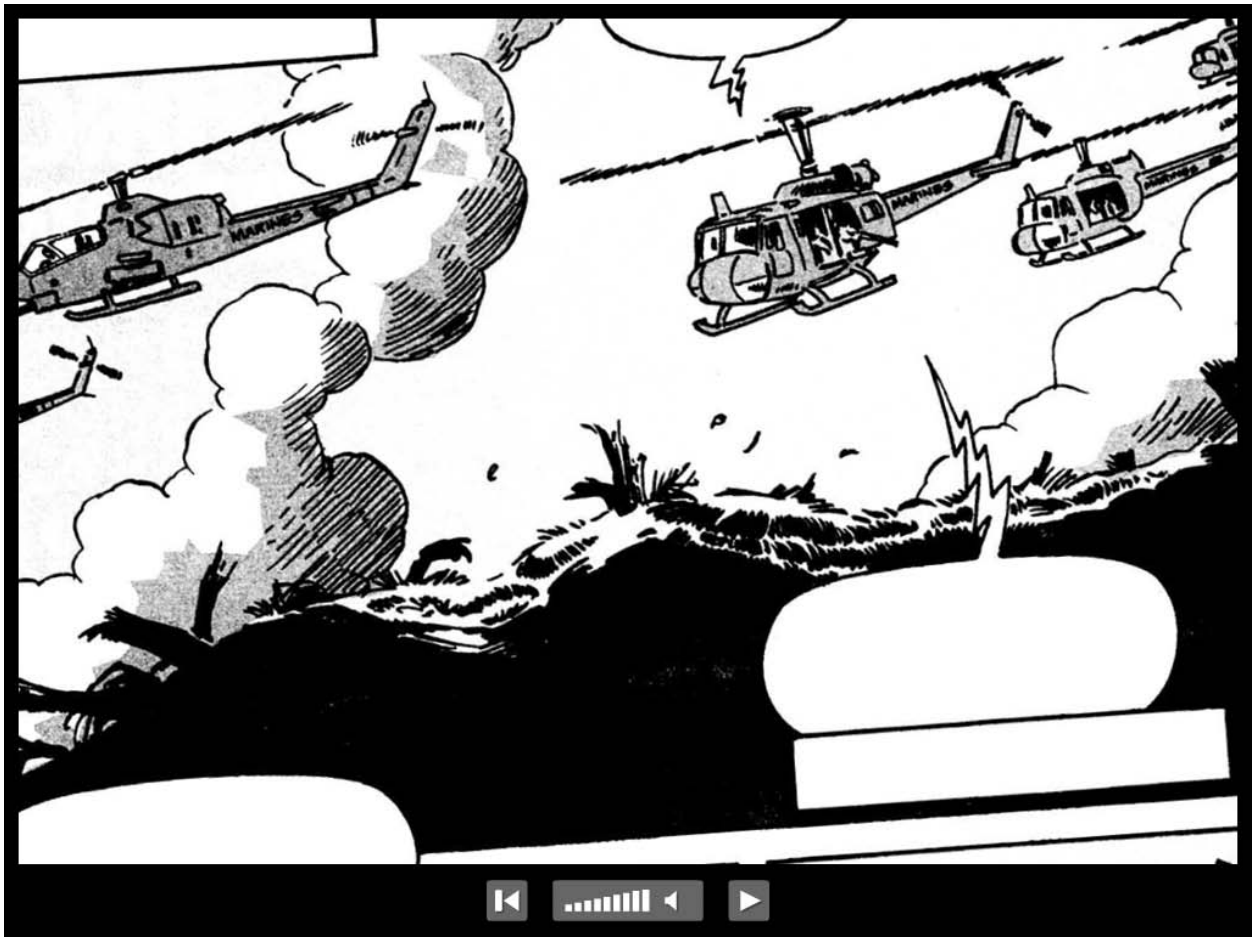

Figure 10. COMBAT Screen Shot (prototype)

Figure 11. COMBAT Screen Shot (prototype)

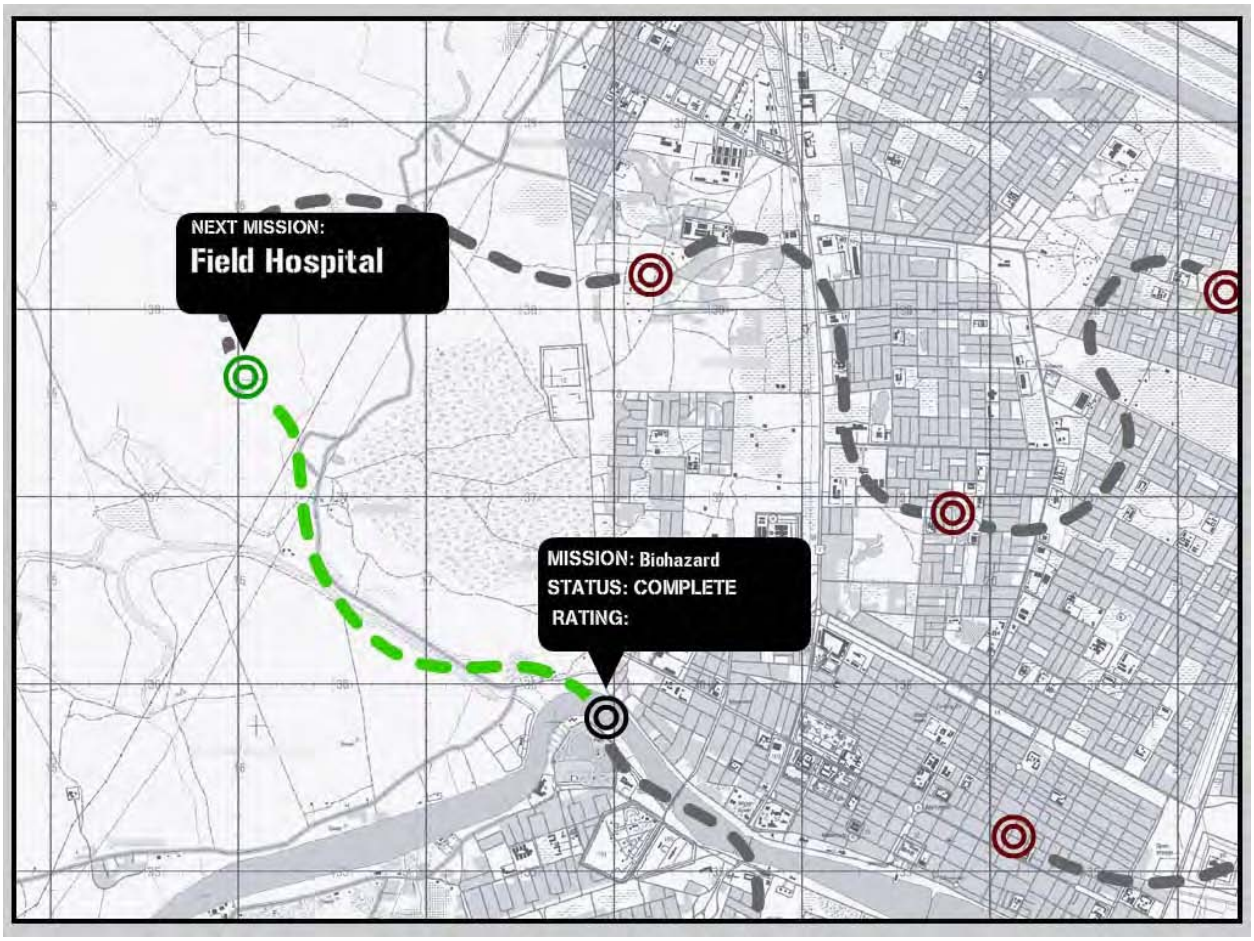

Figure 12. COMBAT Screen Shot (prototype)